

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of:)

Flexibility for Delivery of Communications by)
Mobile Satellite Service Providers in the 2 GHz)
Band, the L-Band, and the 1.6/2.4 GHz Band)

IB Docket No. 01-185

Amendment of Section 2.106 of the Commission's)
Rules to Allocate Spectrum at 2 GHz for Use by)
the Mobile Satellite Service)

ET Docket No. 95-18

To the Commission:

**REPLY COMMENTS OF STRATOS MOBILE NETWORKS (USA) LLC
and MARINESAT COMMUNICATIONS NETWORK, INC.**

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Dated: November 13, 2001

SUMMARY

Stratos Mobile Networks (USA) LLC and MarineSat Communications Network, Inc. (collectively "Stratos") hereby file these reply comments in the Commission's above-captioned Notice of Proposed Rulemaking ("the *NPRM*"). The *NPRM* seeks comment on whether the Commission should allow Mobile-Satellite Service ("MSS") licensees, in the 2 GHz, Big LEO and L-bands (collectively the "MSS bands"), flexibility to use their authorized frequencies for "ancillary" terrestrial operations in conjunction with the satellite services that are already authorized.

As a threshold matter, the comments demonstrate the important role that MSS serves in providing needed telecommunications services to the public. MSS is often the only means of telecommunications to remote locations with no terrestrial infrastructure. Significant MSS users include the U.S. military; law enforcement; federal, state and local civilian agencies; non-governmental organizations such as the United Nations and the Red Cross; and commercial industries, such the shipping, maritime, aeronautical, oil and gas, mining and fishing industries. In addition to serving their daily telecommunications needs, MSS provides the only means to participate in the Global Maritime Distress and Safety Service ("GMDSS") required by international treaty and U.S. law for thousands of U.S. passenger and cargo ships (greater than 300 tons gross tonnage), and, through the aeronautical mobile-satellite (R) service ("AMS(R)S"), it provides safety-of-life communications for approximately 2,500 aircraft.

Stratos understands that some MSS system operators have argued that ancillary terrestrial services are essential to the viability and success of the MSS industry. Stratos, as well as other commenters, including MSS system operators Iridium Satellite LLC ("Iridium") and Inmarsat Ventures PLC ("Inmarsat"), disagree with this general proposition. Stratos has enjoyed

significant growth without an ancillary terrestrial services component to its MSS offerings. Indeed, over a five year period, Stratos' parent company experienced revenue growth of 73,000%, mostly attributed to the provision of MSS. Iridium and Inmarsat do not believe that ancillary terrestrial services are necessary, or even helpful, for their businesses.

Stratos agrees with those commenters who believe that if ancillary terrestrial services were approved, terrestrial use could overwhelm the MSS bands. Given the large market for terrestrial mobile services, opening up the MSS bands for terrestrial mobile use would encourage MSS system operators to allocate spectrum and other resources away from MSS and towards terrestrial mobile services. With decreased investment, MSS networks would be compromised and lack the necessary technological innovations to keep up with demand. Such a result clearly would not be in the public interest.

A number of commenters have also shown that the significant harmful interference caused by ancillary terrestrial services would reduce reliability and exacerbate a shortage of MSS spectral resources -- an unacceptable result for a service that is relied upon by so many for critical safety communications. This interference would harm not only harm the MSS system of the operator that is providing ancillary terrestrial services, but other MSS systems as well, including those operating outside of the U.S. and in adjacent frequency bands. The Commission should avoid this harmful interference by not authorizing ancillary terrestrial services for MSS. At a minimum, the substantial evidence of harmful interference requires further study by the MSS industry and the Commission before any conclusions can be reached in this proceeding.

Many commenters further note that any perceived need for ancillary terrestrial services can simply be met by dual-mode/dual-band phones, providing MSS in the MSS bands

and terrestrial wireless services in bands already allocated for such service. The existing terrestrial infrastructure and investment presents the most economical, interference-free and reliable alternative for MSS system operators to augment coverage in urban areas. If the demand for ancillary terrestrial mobile services is as great as MSS system operators suggest, roaming agreements with terrestrial wireless providers should be cost-efficient and competitive, and manufacturers will gladly manufacture dual-mode/dual-band MSS phones that are attractive to consumers.

To the extent that the Commission decides to permit ancillary terrestrial services, it should do so only after ensuring that there would be no decrease in MSS capacity. The consumer demand for terrestrial mobile services far exceeds the demand for MSS both in number of consumers and revenues. Accordingly, MSS system operators with authority to provide ancillary terrestrial services would have significant incentives to reduce the capacity of their satellite services in order to maximize the capacity of their terrestrial services. Indeed, a MSS system operator could have a strong incentive to set prices for MSS artificially high in order to reduce the demand and capacity necessary for satellite services.

MSS system operators obtained their spectrum by promising to provide MSS, not by outbidding others who wanted to use the spectrum for terrestrial services. Therefore, they should not be permitted to reduce the capacity available for MSS, particularly since MSS users have few alternative providers while terrestrial wireless users can already select from a number of competitors.

To minimize the risk that MSS would become "ancillary" to ancillary terrestrial services, the Commission should impose several conditions on MSS system operators that are authorized to provide ancillary terrestrial services. **First**, any provision of ancillary terrestrial

services should be on a “secondary” and non-harmful interference basis. Any interference complaint by another MSS licensee should result in the immediate shutdown of all terrestrial networks in the subject MSS bands until the problem is resolved.

Second, any use of MSS spectrum for ancillary terrestrial services should not limit the ability of MSS system operators to provide satellite services in the MSS bands either because of additional interference, increase in the noise floor, or pursuant to international coordination agreements.

Third, MSS system operators offering ancillary terrestrial services should be subject to the common carrier requirement to price MSS on a just and reasonable basis. An MSS system operator should not be allowed to adopt pricing, terms or conditions that effectively discourage users from buying MSS. Any price, term or condition that discourages MSS use should be deemed presumptively unreasonable. Without this minimal constraint, MSS system operators would have every incentive to price MSS at levels that would retard demand.

Fourth, all single-band terminals that have the capability to use ancillary terrestrial services in the MSS bands should be, at a minimum, dual-mode terminals capable of transmitting and receiving MSS. To permit the distribution of terminals that are not capable of transmitting and receiving MSS would only encourage MSS system operators to replace MSS with terrestrial services. There should be no difficulty with this requirement if terrestrial services would be truly ancillary.

Commenters have acknowledged that MSS is a critical service that serves an indispensable role in the communications network for government, commercial and emergency communications that protect human lives and property and offer the sole means of communications for most users. The Commission should not jeopardize MSS by permitting

ancillary terrestrial services in the MSS bands. At a minimum, commenters have identified significant harmful interference issues that require further study by both industry and the Commission. To the extent, however, that the Commission decides to proceed with introducing ancillary terrestrial services despite these serious interference concerns, it should only do so after imposing the conditions outlined above to protect and preserve the MSS spectrum for the users that need it.

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¹ See *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Band*, FCC 01-225 (rel. Aug. 17, 2001) ("*NPRM*"). Stratos Mobile Networks (USA) LLC and MarineSat Communications Network, Inc. are both indirectly owned by Stratos Global Corporation, a Canadian corporation. On October 31, 2001, the International Bureau extended the filing deadline of November 5, 2001 for reply comments in this proceeding to November 12, 2001. See *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Band*, Order Extending Comment Period, DA 01-2548 at ¶ 3 (rel. Oct. 31, 2001). Since November 12, 2001 is a holiday (observance of Veterans Day) as set forth in the Commission's Rules, Stratos is submitting its reply comments today, November 13, 2001. See 47 C.F.R. § 1.4(e), (j).

Big LEO and L-bands, flexibility to use their authorized frequencies for "ancillary" terrestrial operations in conjunction with the satellite services already being offered.²

I. THE COMMENTS DEMONSTRATE THE IMPORTANT ROLE THAT MSS HAS IN THE COMMUNICATIONS INFRASTRUCTURE

Stratos' comments highlighted the critical role that MSS plays for the government, businesses and individual consumers.³ Many commenters, including those supportive and opposed to ancillary terrestrial services, agree.⁴ MSS is distributed to a wide range of users who rely on MSS on a daily basis often as the only means of telecommunications to remote locations with no terrestrial infrastructure, including the U.S. military, law enforcement, and federal, state and local civilian agencies, non-governmental organizations such as the United Nations and the Red Cross, and commercial industries, such the shipping, maritime, aeronautical, oil and gas, mining and fishing industries. GlobalStar points out that "MSS systems can offer an instant infrastructure in markets not covered by terrestrial wireline or wireless services, and can readily

² See *NPRM* at ¶¶ 3 - 4.

³ See Stratos Comments at 4 - 7.

⁴ See GlobalStar Comments at 3; Motient Comments at 9 - 10; Inmarsat Ventures plc Comments at i ("Inmarsat Comments") ("Inmarsat offers a wide range of services to users who have mobile communications needs or who are beyond the reach of terrestrial communications networks. Governments, companies and individuals use Inmarsat's satellite system for communications purposes including aeronautical and maritime navigation, distress messaging, search and rescue operations coordination, remote reporting, video transmission, Internet access and voice communications."); Telenor Broadband Services AS Comments at 4 ("Telenor Comments") ("Contrary to the assertion of some parties, MSS provides extremely valuable commercial and public safety services and, in some instances, offers services of a quality and price that is superior to terrestrial mobile services."); New ICO Global Communications Comments at 6 ("ICO Comments"); Loral Space & Communications, Ltd. Comments at 2 - 5.

connect populations in these areas to basic and advanced telecommunications services."⁵

Motient similarly observes that:

[i]n addition to serving the Commission's goal of bringing advanced communications to all areas, MSS systems also serve a critical role in times of national emergency and disasters. Many disasters, such as earthquakes and hurricanes, disrupt terrestrial wireline and wireless telecommunications systems. Because [Motient's] satellites will be located 22,000 miles above the Earth, its infrastructure is unaffected by these disasters. MSS systems thereby provide a reliable means of communications for emergency response organizations.⁶

Numerous commenters, including Stratos, also highlighted the critical role that MSS played on September 11th, and continues to play in its aftermath.⁷ The comments leave little doubt that there is a core market that relies on MSS for day-to-day, back-up and emergency communications.

Stratos disagrees with those commenters who suggest ancillary terrestrial services are necessary to maintain the viability of MSS.⁸ As set forth in its comments, the significant demand for MSS has allowed the parent company of Stratos to become the fastest growing technology company in Canada with revenue growth of 73,000% over a five year period.⁹ There

⁵ GlobalStar Comments at 3.

⁶ Motient Comments at 9 - 10.

⁷ See, e.g., Stratos Comments at 6; Motient Comments at 10; Mobile Communications Holdings, Inc. Comments at 6 n.13; ICO Comments at 13.

⁸ See, e.g., Motient Comments at 11; ICO Comments at 15; GlobalStar Comments at 4; Unofficial Bondholders Committee of GlobalStar, L.P. Comments at 6.

⁹ Stratos Global Corporation, the ultimate parent company of Stratos Mobile Networks (USA) LLC and MarineSat Communications Network, Inc., was recently ranked number 1 in a survey of the fastest growing technology companies in Canada. See "Stratos Named Canada's
(continued...)

is a market for MSS and it is more than sufficient to support multiple MSS system operators. Indeed, as Inmarsat highlights, its MSS business is growing even without ancillary terrestrial services:

Inmarsat is a successful commercial operator of a global MSS network and has no need for an ancillary terrestrial component. The L-band is a critical resource in limited supply, and Inmarsat's continued need for L-Band spectrum is driven by the increasing demands of its customers.¹⁰

Inmarsat's experience over the past twenty years demonstrates that MSS businesses are viable if run efficiently and targeted to the appropriate markets. Inmarsat has built its business by providing the essential business services described above, and not by trying to compete with cellular and PCS operators. The result is a company providing services to targeted markets, including safety services for the maritime and aeronautical industries, with an annual revenue of over \$400 million. With the recent authorization from the Commission, Inmarsat stands ready to expand its operations in the U.S. market and to address the needs of the rural and other underserved communities. . . . [O]pening of the L-Band to terrestrial uses would result in unacceptable interference into Inmarsat's existing network and future services in the United States, and constrain the growth of the Inmarsat system.¹¹

(...continued)

Fastest Growing Technology Company in the 2001 Deloitte & Touche Canadian Technology Fast 50," *Stratos Press Release* (Sept. 21, 2001). See also *Stratos Comments* at 2.

¹⁰ Inmarsat Comments at 2.

¹¹ *Id.* at 11. See also Telenor Comments at 6 ("There is no evidence that a MSS system needs to attract a consumer mass market in order to become a viable business. History shows that the most successful MSS players have been those that have targeted professional niche markets with tailor made applications and service offerings. On the other hand, the MSS operators that have attempted to compete head-to-head with cellular systems in mass markets, with handheld terminals and services limited to voice and low-speed data, have faced problems.").

As Inmarsat indicates, MSS can be a successful business by targeting consumer markets that have been avoided or underserved by terrestrial CMRS providers. Significantly, despite all of its prior financial problems, Iridium does not view the provision of ancillary terrestrial services as some form of panacea for ailing aspects of the MSS industry. To the contrary, "Iridium wishes to emphasize that it is not essential to the success of the Iridium System that MSS licensees be permitted to offer ancillary terrestrial services. . . ." ¹²

Some commenters suggest that ancillary terrestrial services would increase subscribership and therefore lower the cost of handsets and service by spreading overhead costs to more subscribers. ¹³ As other commenters observe, however, this argument is a classic case of the "tail wagging the dog." ¹⁴ The satellite services market and terrestrial services market are quite distinct. Consumers in urban or suburban areas are sufficiently served by multiple terrestrial CMRS carriers. Industrial users operating in remote areas outside of terrestrial wireless coverage areas must use MSS to serve their communications needs. There is rarely a need to cover both areas with one handset. As Telenor observes, "[t]he experience so far has been that both cellular and MSS users tend to demand simply single mode terminals which are optimized to one segment and one usage type only." ¹⁵ Indeed, the failure of Iridium and GlobalStar to attract additional consumers even with dual-mode/dual-band handsets should be

¹² Iridium Comments at 6.

¹³ *See, e.g.*, Unofficial Bondholders Committee of GlobalStar L.P. Comments at 19; GlobalStar Comments at 5; Progress and Freedom Foundation Comments at 12 -13; ICO Comments at 20.

¹⁴ *See, e.g.*, Mobile Satellite Users Association Comments at 5

¹⁵ Telenor Comments at 7.

evidence to the Commission that there simply is not a substantial market for joint MSS/terrestrial services. Rather, based on their particular projected needs, consumers choose one over the other.

In substantial part to fill a void in the communications infrastructure, MSS system operators were licensed to provide satellite services. To the extent that terrestrial services are also in high demand by the customers of MSS, MSS system operators can enter into resale agreements with established CMRS carriers or purchase their own terrestrial CMRS spectrum at auction in order to get into the terrestrial services business. Any foray into the terrestrial services business, however, should not come at the expense to the satellite services offered in the MSS bands, either because of harmful interference, or through decreased investment for MSS in favor of ancillary terrestrial services.

II. AUTHORIZING ANCILLARY TERRESTRIAL SERVICES WOULD CAUSE HARMFUL INTERFERENCE TO MSS

Many commenters have shown that the provision of ancillary terrestrial services in the MSS bands would cause harmful interference to existing and planned MSS systems operating in adjacent spectrum or neighboring countries. In light of such demonstrated concerns, the Commission should not authorize any ancillary terrestrial services in the MSS bands. At a minimum, the record in this regard is not sufficiently developed so as to justify a Commission conclusion that ancillary terrestrial services and MSS can co-exist in the MSS bands. Rather, significant further study is required before the Commission can make that determination -- even for operation of ancillary terrestrial services on a secondary basis in the MSS bands.

Those commenters that support the introduction of ancillary terrestrial services minimize the risk of harmful interference by suggesting that interference to MSS can be mitigated simply by authorizing only MSS system operators to provide the ancillary services,

limiting ancillary services only to the spectrum that has been coordinated for satellite use, and by applying existing CMRS technical rules (*e.g.*, out-of-band emissions, power limits, tower height) to MSS terrestrial facilities.¹⁶ However, other commenters have established that the harmful interference would be extensive and would threaten the reliability and capacity of MSS even with such limitations.¹⁷

Indeed, as Inmarsat demonstrates, the harmful interference created from ancillary terrestrial services would not only extend to those MSS systems providing ancillary terrestrial services (intra-system interference), but to other MSS systems and wireless systems providing services in other bands. In analyzing Motient's ancillary terrestrial services proposal, Inmarsat identifies the following areas of harmful interference:

- **First**, the in-band signals of Motient's terrestrial mobile terminals would cause unacceptable interference to the signals being received by the Inmarsat satellites. Specifically, "the Inmarsat satellite receivers will receive co-channel interference through the satellite antenna sidelobes from the Motient terrestrial mobile transmitters."¹⁸ "With as few as 500

¹⁶ See Motient Comments at 26-29.

¹⁷ See, *e.g.*, Stratos Comments at 8 - 9; Inmarsat Comments at 12 - 16; Telenor at 6 ("Calculations made by Inmarsat, show that the base stations and mobiles in the systems proposed by Motient and ICO, may cause harmful interference to the MSS systems operating in the same band, and potentially cause serious limitations to the frequency reuse and capacity planning of existing and new MSS systems. In particular, Motient's proposal of using MSS L-band, would potentially cause problems to Inmarsat's own network, which supports over 220000 users today with services that include safety/distress to the maritime and aeronautical communities."); KitComm Satellite Communications Ltd. Comments at 4 ("[Ancillary terrestrial components ("ATC")], in order to accomplish their proponents' goal of penetrating into urban canyons and buildings, will unavoidably and drastically alter the in-band and out-of-band interference environment for MSS operators in the same or adjacent bands. The effect, given the sensitivity of MSS user terminals, could be to essentially drown out competition from other, non-ATC equipped operators.").

¹⁸ Inmarsat Comments at Technical Annex, p.5.

co-frequency Motient carriers, the increase in Inmarsat system noise temperature would be approximately 100%."¹⁹ Indeed, levels as low as 6% would "be unacceptable as it would degrade the overall performance of the Inmarsat system."²⁰

- **Second**, out-of-band emissions from Motient's terrestrial mobile terminals would cause unacceptable interference to the signals being received by the Inmarsat satellites. "Considering. . .that a single Inmarsat receive spot beam could cover a geographic area as large as the north-east corridor from Washington DC to New York, then it is conceivable that there could be tens of thousands of Motient terrestrial channels simultaneously in use in such an area. In this case the additional degradation to the Inmarsat satellite noise temperature would be in excess of 10%, and therefore totally unacceptable."²¹
- **Third**, terrestrial base stations' in-band signals and out-of-band emissions would create unacceptable interference into the receivers of nearby Inmarsat mobile terminals. Based on the almost exclusive reservation of the L-Band worldwide for MSS, "Inmarsat designed its mobile terminals to operate efficiently and effectively in the presence of other *satellite services*. Broad deployment of terrestrial transmitters operating in the L-Band, however, would create significant new issues that Inmarsat did not and could not have been expected to anticipate."²² The danger of harmful interference to Inmarsat's mobile terminals is calculated to occur within 1000 meters or more of Motient's base stations in urban areas and within 10,000 meters or more in suburban and rural areas.²³ As for aeronautical mobile terminal users, "[b]ased on Inmarsat's technical analysis, under the most likely conditions, airborne terminals could suffer overload failures as far as 22 miles away from a base station while flying below 2,500 meters."²⁴

¹⁹ *Id.*

²⁰ *Id.*

²¹ Inmarsat Comments, Technical Annex at 7.

²² *Id.* at 15 (emphasis added).

²³ *Id.*

²⁴ *Id.*

- **Fourth**, Inmarsat demonstrates that Motient's terrestrial uses would degrade the performance of its own space-based services and reduce the traffic-carrying capacity of the Motient space segment.²⁵ In order to maintain the same level of capacity, Motient would need to seek access to more L-Band spectrum -- spectrum that is already scarce.

In discussing harmful interference to 2 GHz MSS systems, Boeing has stated that "sharing between MSS service and an ancillary terrestrial service in the downlink band cannot be accommodated because of harmful, unresolvable interference to any MSS licensee in an adjacent band."²⁶ Serious concerns over harmful interference have been expressed not only by participants in the MSS industry, but other communications industries that are operating in adjacent spectrum.²⁷

The harmful interference from ancillary terrestrial services would jeopardize the reliability and availability of MSS -- an unacceptable result since vital safety services are provided by MSS. In particular, serious concerns have been expressed over the reliability and capacity available for the maritime and aviation industries that rely on MSS as an integral part of each industry's communications network:

Airplanes relying on Inmarsat terminals, either by design or through the failure of alternative communications systems, would face "overload" problems and unacceptable levels of unwanted emissions while flying near Motient base stations. . . .Interference

²⁵ *Id.* at 12.

²⁶ Boeing Comments at 12.

²⁷ *See, e.g.*, Wireless Communications Association International, Inc. Comments at 4 ("In short, should the Commission permit terrestrial use of the MSS bands, the Commission will have to use guardbands, power limits, the spectral mask, and frequency stability requirements to craft an environment in which MDS and ITFS licensees will be free from interference cause by terrestrial operations on MSS spectrum."); Joint Comments of The Association for Maximum Service Television, Inc. and The National Association of Broadcasters at 15.

from Motient's terrestrial network threatens the reliability of communications between ships and shore. Emergency signals from ships at sea may be blocked or need to be repeated, thereby delaying rescue efforts.²⁸

The aviation industry parties concur in this assessment:

If land mobile base stations were permitted to operate on the satellite downlink frequencies, harmful interference could occur to aircraft stations operating hundreds of miles offshore and in domestic air space. . . .The proponents of [terrestrial] operations in this band can only limit interference by assigning aviation services to separate frequencies, but this approach could severely limit the spectrum needed to support the growth of aeronautical satellite communications and would not address the adjacent channel interference identified by INMARSAT.

Flexibility of use would also create uncertainty in the aviation community as to the availability and quality of communications that will be possible using mobile satellites. This uncertainty would deter aviation's further investment in upper L-band AMS(R)S systems, and no alternative communications meeting aviation's unique requirements will be available in the reasonably near future.²⁹

²⁸ Inmarsat Comments at 17. *See also* Aviation Industry Parties Comments at 4 (stating that in the wake of September 11th that new systems are being proposed that "will require more intensive use of the current spectrum resources used by aviation and increased levels of performance, reliability, and availability for aeronautical communications systems. This is no time to be reducing the availability of safe and reliable communications for aviation."); Aerospace and Flight Test Radio Coordinating Council Comments at 4 ("Terrestrial use of the L-band MSS frequencies has significant potential to interfere with adjacent channel telemetry signals unless adequate safeguards are in place. . . .Terrestrial transmitters could be located in close proximity to flight test operational areas and would pose a significant interference problem to ground receive stations.").

²⁹ Aviation Industry Parties Comments at ii.

It is not in the public interest to tolerate any such lack of MSS availability or harmful interference into these critical communications services that form a vital part of aviation and maritime safety.³⁰

Motient has attempted to demonstrate that its "integrated satellite and terrestrial system will be able to provide real-time priority and preemptive access in both the upper and lower L-bands" in order to protect the GMDSS and AMS(R)S services.³¹ Even if one were to assume that it would be possible for Motient to provide this priority and preemptive access with ancillary terrestrial services, it is still necessary to protect other critical MSS communications. While the aviation and maritime industries certainly rely on MSS for emergency communications, many other important users, such as the U.S. military, law enforcement, humanitarian agencies, and natural resources industries, also rely on MSS as the sole means for providing critical day-to-day communications for some of their business operations. Harmful interference from ancillary terrestrial services would also disrupt these vital governmental and industrial operations.

At a minimum, the comments that have been submitted to the Commission to date suggest that further studies should be conducted before the Commission can reasonably, and responsibly, conclude that ancillary terrestrial services can be provided without causing harmful interference to satellite services in the MSS bands.³² The Commission has routinely engaged in

³⁰ As discussed in Stratos' initial comments, the Global Maritime Distress and Safety Service ("GMDSS"), which is carried over Inmarsat, represents the *only* system providing comprehensive international maritime safety communications. *See* Stratos Comments at 5.

³¹ Motient Comments at 28.

³² *See* Mobile Satellite Users Association Comments at 5 ("MSUA is concerned at the absence of definitive technical assessments of the ancillary terrestrial applications' potential for (continued...)")

and requested such further study in proceedings where the issue of harmful interference cannot be resolved among adverse parties.³³ The Commission should not require less in this proceeding -- especially when harmful interference would jeopardize emergency and safety communications.

In addition to degrading the overall performance of MSS systems, commenters establish that harmful interference from ancillary terrestrial services into MSS systems operating outside of the United States would violate the United States' international treaty obligations.³⁴

For example, the ITU Table of Frequency Allocations does not provide any allocation for

(...continued)

interference and/or reduction of MSS spectrum capacity. We believe the record on this is incomplete, and that the FCC should encourage proponents to provide appropriate studies to substantiate their claims of non-interference.").

³³ Indeed, over several years, industry interference studies were conducted as part of the Commission's rulemaking proceedings for the LMDS and 38 GHz bands, which involved satellite and wireless services operating in the same and adjacent bands. *See Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5 - 38.5 GHz, 40.5 - 41.5 GHz, and 48.2 - 50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5 - 42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9 - 47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0 - 38.0 GHz and 40.0 - 40.5 GHz for Government Operations*, 13 FCC Rcd. 24649, 24653 (1998) *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5 - 29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, 11 FCC Rcd. 19005, 19025 (1996). In connection with Northpoint's desire to provide wireless terrestrial services in the bands allocated for use by direct broadcast satellite ("DBS"), the Commission has not only looked at extensive interference studies from Northpoint and the DBS industry, but Congress required that an independent interference study be conducted as to the possibility of harmful interference. *See In the Matter of Applications of Broadwave USA, PDC Broadband Corporation, and Satellite Receivers, Ltd. to Provide A Fixed Service in the 12.2 - 12.7 GHz Band*, 16 FCC Rcd. 4096 (2000); *Comments Requested on the MITRE Corporation Report on Technical Analysis of Potential Harmful Interference to DBS from Proposed Terrestrial Services in the 12.2 - 12.7 GHz Band*, 16 FCC Rcd. 8417 (2001).

³⁴ *See* Aviation Industry Parties Comments at 7 - 8; Inmarsat Comments at 18.

terrestrial services in the United States at the L-band. While the United States is free not to follow the ITU allocation within its borders, it can only do so as long as such non-conforming uses do not cause harmful interference to allocated services outside of the United States.³⁵ As Inmarsat points out, authorizing ancillary terrestrial services, however, would "cause unacceptable interference to the operation of Inmarsat's satellite network and other MSS systems, such as the systems of Mexico (Solidaridad), the Russian Federation (Volna and More) and Japan (MTSAT)."³⁶

III. COMMENTERS AGREE THAT DUAL-MODE/DUAL-BAND HANDSETS CAN SATISFY THE NEEDS OF MSS SYSTEM OPERATORS FOR TERRESTRIAL SERVICES

Many commenters agree that the most efficient, economic and interference-free way of satisfying any terrestrial mobile service needs is to use dual-mode/dual-band handsets that take advantage of the substantial investment that has already been made by the terrestrial wireless industry.³⁷ As AT&T Wireless notes, ancillary terrestrial services are

³⁵ See ITU Radio Regulations, Article S4, Section S4.4. See Inmarsat Comments at 18.

³⁶ Inmarsat Comments at 18. See also Aviation Industry Parties Comments at 7 ("In order to permit alternative use of L-band, the FCC should rely upon the provisions that permit states to assign frequencies in derogation of the table [sic] international frequency allocations on a non-interference basis. . . . [T]he interference potential for terrestrial base stations go hundreds of miles beyond the territory of the United States into adjacent countries and over adjacent oceanic areas.").

³⁷ See Stratos Comments at 10 - 11; AT&T Comments at 7; Society of Broadcast Engineers, Inc. Comments at 1 ("SBE is forced to remind the Commission that large metro areas in the United States are already well served by cellular and Personal Communication Service ("PCS") carriers. Indeed, it is precisely because cellular and PCS already have in place an extensive network of terrestrial cells that in-building service is now available in all but the smallest communities."); CTIA Comments at 13 ("If MSS providers really just need a way to supplement coverage in urban areas, they can make alternative arrangements with CMRS providers. In fact, both New ICO and Motient have affiliated terrestrial wireless operations. . . . (continued...)")

entirely unnecessary because MSS providers can obtain supplementary terrestrial service through partnerships with existing CMRS providers. . . . Indeed, MSS providers have already successfully partnered with CMRS providers to address the signal problems in urban areas that MSS operators cite as the primary reason for the failure of MSS. Motient, for instance, notes that it has successfully implemented a satellite paging service by using the existing terrestrial network that it acquired through its merger with ARDIS, and New ICO's controlling shareholder also controls a national terrestrial CMRS provider -- Nextel Communications. . . . Similarly, Celsat has proposed to rely on commercial arrangements to overcome signal problems and extend coverage to urban areas.³⁸

Telenor further notes that the dual-mode/dual-band approach has proven its technical feasibility:

The technical feasibility of dual mode/dual-band terminals has already been proven by many operators and manufacturers both in the MSS world (e.g. ACES, Thuraya, Globalstar) and cellular world (GSM 900/1800 MHz). The dual-band approach would not only be the best in terms of avoiding licensing and interferences. . . ., but would also be the most sensible approach in terms [of] reuse of existing and planned network infrastructure and terminal technology. Although we have identified a number of problems associated with dual-mode/single-band terminals, we are unable to identify any advantages, technical or commercial.³⁹

(...continued)

."); Aviation Industry Parties Comments at ii ("Finally, flexible use would not serve the public interest. Terrestrial land mobile service is currently available in urban areas. These services can be offered by the mobile satellite operations in conjunction with their satellite services."); *id.* at 11 (stating that by using existing cellular communications facilities "MSS and terrestrial facilities are more efficiently used and the MSS operator is freed of the expense of creating and operating a redundant terrestrial system."); Inmarsat Comments at 27 ("To the extent that Motient believes that its MSS system will not be able to operate in urban areas, there is a practical solution that exists -- without the problems created by using the L-band for terrestrial purposes -- and that is dual-band phones."); Telenor Comments at 7.

³⁸ AT&T Wireless Comments at 7.

³⁹ Telenor Comments at 7.

In response, some commenters have suggested that dual-mode/dual-band phones are problematic because they would require MSS system operators to enter into costly roaming agreements, few manufacturers are likely to want to manufacture dual-mode/dual-band phones, and any phones that are manufactured would be bulky and unattractive to consumers.⁴⁰

Stratos questions whether roaming agreements would be as costly as some commenters have suggested. Certainly, ICO should be able to work out a roaming agreement with its affiliate NEXTEL. More generally, the terrestrial wireless market enjoys substantial competition with six national providers of terrestrial wireless services.⁴¹ This competition ensures that charges for roaming would be competitive. Indeed, if ancillary terrestrial services would be in demand by MSS users as much as some proponents of ancillary terrestrial services suggest, existing terrestrial wireless providers would aggressively compete with each other to satisfy the demand. In any event, it is difficult to believe that roaming agreements would be more costly to MSS customers than the costs that would need to be passed through by an MSS system operator if it were to build its own (redundant) terrestrial network to utilize the MSS bands. The more cost-effective solution is for MSS system operators to take advantage of the enormous investment that has already been made in providing terrestrial wireless services throughout the country.

⁴⁰ See, e.g., Motient Comments at 14 - 15; GlobalStar Comments at 14 - 15; Unofficial Bondholders Committee of GlobalStar, L.P. Comments at vii.

⁴¹ In commenting on the recent decision to lift the spectrum cap, Chairman Powell was quoted as stating that "[b]y any standards, [the] wireless market is the most competitive in [the] telecom sector. . . ." "FCC To Repeal Spectrum Cap in 2003, Lifting It By 10 MHz Now," Communications Daily at 2 (Nov. 9, 2001).

Similarly, if there were a significant enough market and demand justifying the construction of a nationwide terrestrial network to "augment" MSS, this would certainly provide enough incentive for manufacturers to produce dual-mode/dual-band equipment, including equipment that is not bulky, but attractive to consumers.⁴² The consumers that want ancillary terrestrial services as part of a combined MSS and terrestrial CMRS offering are unlikely to care whether the capability comes from a single or dual-band terminal. What they will care most about is that the service is reliable and affordable. By relying on existing terrestrial CMRS infrastructure and investment, as well as avoiding harmful interference with the core satellite services of MSS, dual-mode/dual-band phones present the most sensible solution for MSS operations.

IV. STRICT CONDITIONS SHOULD BE IMPOSED ON MSS SYSTEM OPERATORS IF THE COMMISSION AUTHORIZES ANCILLARY TERRESTRIAL SERVICES

As set forth above, Stratos and other commenters oppose using the MSS bands for ancillary terrestrial services. However, to the extent that the Commission decides to permit ancillary terrestrial services, it should only do so after imposing several necessary conditions to protect the users of satellite services in the MSS bands. These conditions should include more

⁴² As to the size of dual-mode/dual-band handsets, Stratos doubts whether in fact they will be as bulky as some commenters suggest. The dual-mode/dual-band handsets offered by GlobalStar and others are smaller than Motient's single-band MSS terminals. Further, the size of satellite phones is dictated primarily by the power requirements necessary to communicate with a satellite, as opposed to whether the phone is dual-mode/dual-band or dual-mode/single-band.

than simply enforcing the Commission's satellite coverage and milestone requirements for MSS licensees as suggested by several commenters.⁴³

Besides being cumbersome and difficult to enforce,⁴⁴ the Commission's satellite coverage and milestone requirements alone do not guarantee that there would be sufficient usable spectrum available for those persons desiring MSS services. An MSS system operator with authority to provide ancillary terrestrial services would have strong incentives to reduce its capacity for satellite services in order to maximize the capacity of its available spectrum for terrestrial services. However, as Motient has previously argued, capacity for MSS in the L-band is already severely constrained.⁴⁵ Permitting ancillary terrestrial services would only reduce this critical capacity further and disrupt MSS communications.

An MSS system operator could minimize its need for MSS spectrum simply by pricing its satellite services high enough to discourage MSS usage or by limiting its satellite offerings to the public. Either way, critical satellite services would be denied to government

⁴³ See, e.g., Constellation Communications Holdings, Inc. Comments at 26; ICO Comments at 44 - 45; Motient Comments at 23 - 26.

⁴⁴ See AT&T Wireless Comments at 6 ("Even if the Commission could rationally determine the appropriate level of MSS coverage that should be required prior to the commencement of terrestrial service, it is not clear what consequences should attach to partial or permanent lapses in satellite coverage caused by technical failure or obsolescence of a satellite (or any other reason)."); Aviation Industry Parties Comments at 11 ("Even with these coverage requirements, the temptation will be great for the MSS operator to abandon or minimize its efforts to provide MSS and to concentrate on cellular service. At the end of the day, the hundreds of millions of dollars invested by aviation in the development of this service and the equipage of its aircraft would be for naught.").

⁴⁵ See, e.g., *In the Matter of Comsat Corporation d/b/a Comsat Mobile Communications*, FCC 01-272 at ¶ 68 (Oct. 9, 2001) ("Motient argues that there is not enough spectrum to permit the addition of so many new terminals and that the Commission must assess the cumulative impact of these additions.").

agencies, companies and individuals in sufficient quantity to reliably meet demand. Coverage and milestone requirements alone would not prevent MSS system operators from acting in such a manner. Indeed, MSS system operators could construct and launch MSS systems only to satisfy the Commission's basic coverage and milestone requirements, without ever providing any satellite services.

Therefore, it is critical that the Commission impose several additional conditions on any MSS system operator that is authorized to provide ancillary terrestrial services in order to ensure that these services would be truly ancillary to the provision of MSS. **First**, any provision of ancillary terrestrial services should be on a “secondary” and non-harmful interference basis.⁴⁶ Any interference complaint by another MSS licensee should result in the immediate shutdown of all terrestrial networks in the subject MSS bands until the problem is resolved. However, this basic condition does not guarantee that there would be sufficient MSS spectrum. Indeed, an MSS system operator could choose to reduce MSS in order to reduce interference issues.⁴⁷

Second, any use of MSS spectrum for ancillary terrestrial services should not limit the available capacity of any MSS system to provide satellite services either because of additional interference, increase in the noise floor, or pursuant to international coordination agreement. While every satellite system has a limited amount of power available to provide service, the MSS band is spectrum limited due to competing demands for satellite channel

⁴⁶ See, e.g., Stratos Comments at 8 - 9; Inmarsat Comments at 12 - 16; Telenor at 6; KitComm Satellite Communications Ltd. Comments at 4.

⁴⁷ See also Inmarsat Comments at 16 ("Thus, the interference caused by Motient's own terrestrial network could cause the need for its customer to use Motient's terrestrial network, instead of its satellite network.").

capacity, which means that any increase in interference or noise could inhibit service. Only during times when there is "excess" satellite capacity should ancillary terrestrial services be allowed. Otherwise, ancillary terrestrial services would preclude the primary MSS service -- clearly, an impermissible result for a secondary service.

Increasing capacity for ancillary terrestrial services at the expense of MSS is particularly problematic since MSS system operators obtained their spectrum by promising to provide MSS, not by outbidding others who wanted to use the spectrum for terrestrial services. MSS system operators should not be permitted now to reduce their capacity for MSS in favor of terrestrial services, particularly since MSS users have few alternative providers while terrestrial wireless users can already select from a number of competitors.

In this regard, Stratos, like Inmarsat, agrees with the Commission's proposal "that any additional spectrum requirements generated by the terrestrial services should *not* be a factor for consideration in the annual satellite coordination review," required by the Mexico City Agreement.⁴⁸ This would ensure that ancillary terrestrial services remain truly "ancillary" to MSS, while at the same time also ensure that sufficient capacity exists for the (current and projected) satellite service demands of MSS customers.

Third, MSS system operators offering ancillary terrestrial services should be subject to the common carrier requirement to price MSS on a just and reasonable basis. An MSS system operator should not be allowed to adopt pricing, terms or conditions that purposely discourage users from buying MSS. Otherwise, MSS licensees would have an economic incentive to skew their pricing in order to artificially dry up the market for satellite services at

⁴⁸ *NPRM* at ¶ 49 (emphasis added). See Inmarsat Comments at 23 - 24.

the expense of consumers that rely on MSS for day-to-day, remote and emergency communications. Any price, term or condition that discourages MSS use should be deemed presumptively unreasonable. Without this minimal constraint, the MSS system operators would have every incentive to price MSS so high that there would be very limited satellite usage.

Fourth, all single-band terminals that have the capability to use ancillary terrestrial services in the MSS bands should be, at a minimum, dual-mode terminals capable of transmitting and receiving MSS, as well ancillary terrestrial services. To permit the distribution of terminals that are not capable of transmitting and receiving MSS would only encourage MSS system operators to replace MSS with terrestrial services. This would not be consistent with the Commission's stated objective in the *NPRM* to determine whether it should "permit MSS licensees in the 2 GHz and L-bands flexibility to use terrestrial operations *in conjunction* with their satellite services on an ancillary basis."⁴⁹ If those MSS system operators seeking to provide ancillary terrestrial services truly intend those services to augment, and not replace, MSS, this requirement should be easily met.

V. CONCLUSION

Commenters have acknowledged that MSS is a critical service that serves an indispensable role in the communications infrastructure for government, commercial and emergency communications that protect human lives and property every day. Using MSS spectrum for terrestrial mobile services is likely to leave too little remaining MSS spectrum for reliable communications, as well as upset carefully crafted spectrum plans in the U.S. and

⁴⁹ *NPRM* at ¶ 22 (emphasis added).

throughout the world. Further, commenters have demonstrated that ancillary terrestrial mobile services would cause harmful interference to satellite services in the MSS bands.

Given the reliance on MSS by government and commercial users, it is not in the public interest to jeopardize these services. Sufficient spectrum for ancillary terrestrial mobile services exists in other frequency bands that can be used for CMRS without putting MSS at risk. As commenters acknowledge, dual-mode/dual-band handsets can satisfy the terrestrial needs of MSS customers by taking advantage of the substantial investment that has been made already in the terrestrial CMRS bands -- all without the threat of any harmful interference to MSS.

The Commission should reject the proposals to use the MSS bands for ancillary terrestrial mobile services, and affirm the critical function that MSS serves in the global telecommunications market. To the extent that the Commission decides to proceed with introducing ancillary terrestrial services, it should only do so after imposing strict conditions of operation on MSS system operators that protect users of satellite services in the MSS bands, including: (1) a requirement that any provision of ancillary terrestrial services should be on a “secondary” and non-harmful interference basis; (2) a requirement that any use of MSS spectrum for ancillary terrestrial services should not limit the ability of MSS system operators to provide satellite services in the MSS bands; (3) a requirement that MSS system operators offering ancillary terrestrial services should be subject to the common carrier requirement to price MSS on a just and reasonable basis; and (4) a requirement that all single-band terminals that have the capability to use ancillary terrestrial services in the MSS bands should be, at a minimum, dual-mode terminals capable of transmitting and receiving MSS.

Respectfully submitted,

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